

STUDIES IN THE EUPATORIEAE (ASTERACEAE). CXXXVI.

FOUR NEW SPECIES OF NEOMIRANDEA.

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Recent collections of Neomirandea from two countries have resulted in the discovery of four new species. The collections are from Costa Rica and Panama which have previously proven to be centers of distribution for the genus. Two new species have been collected by Dr. Thomas B. Croat during his most recent trip to Panama and these are to be included in the treatment for the Flora of Panama. Two new species have been collected by the senior author on a recent trip to Costa Rica.

The efforts of the senior author in Costa Rica have pointed up the important effect of seasonality in the collection of Neomirandea. Most collections have been made during the months of December to February which closely correlates with the dry season in Costa Rica. The last trip was in June, during the rainy season. Many species common at other times of the year were not found and one of the new species was in an area where previous collectors would certainly have noticed it. In addition, N. costaricensis R.M.King & H.Robinson was originally collected by the senior author during the rainy season and it has now been recollected in quantity again in the rainy season. An earlier attempt to recollect the species at its type locality during late January and early February failed. The species, N. eximia (B.L.Robinson) R.M. King & H.Robinson is apparently common at all seasons.

Neomirandea biflora R.M.King & H.Robinson, sp. nov.

Plantae epiphyticae frutescentes subcarnosae ca. 1 m altae pauce vel multo ramosae. Caules teretes glabri inferne usque ad 5 cm diam. Folia opposita anguste petiolata, petiolis plerumque 1-2 cm longis; laminae ovatae plerumque 5-7 cm longae et 2-3 cm latae subcoriaceae base breviter cuneatae margine integrae apice vix acuminatae supra et subtus glabrae, nerviis secundariis pinnatis obscuris. Inflorescentiae late paniculatae usque ad 25 cm latae et 30 cm altae, ramis puberulis. Capitula subsessilia in aggregatis plerumque bina vel ternata ca. 10-12 mm alta. Squamae involucri ca. 20 subimbricatae vel imbricatae ca. 4-5 seriatae valde inaequilongae 1-5 mm longae ca. 1-1.3 mm latae

exteriores ovatae interiores oblongae et laciniatae extus glabrae longitudinaliter atrovittatae. Flores plerumque 2 in capitulo raro 1; corollae ca. 5.5 mm longae late infundibulares lavandulae extus glabrae, tubis et faucibus inferioribus induratis, faucibus intus superne dense hirsutis, lobis elongatis oblongis ca. 2.5 mm longis ca. 0.8 mm latis, cellulis quadratis, parietibus non sinuosis; filamenta in parte superiore ca. 300-350 μ longa; thecae antherarum ca. 1.5 mm longae, appendicibus oblongo-ovatis ca. 400 μ longis et 230 μ latis; styli inferne valde nodulosi glabri; achaenia prismatica ca. 3.5 mm longa subglabra in costis vix remote scabrida; carpodia breviter obturaculiformia, cellulis roundatis ca. 12 μ diam. ca. 8-seriatis; setae pappi ca. 58 apice vix scabrae vix clavatae. Grana pollinis ca. 25 μ diam.

TYPE: COSTA RICA: San Jose: along route 2, ca. 19 kms generally SE of Empalme. Elevation ca. 8,300 ft. June 11, 1974, Robert Merrill King 6762 (Holotype US).

The new species is a member of the typical subgenus with very obvious pubescence inside of the corolla and with a very enlarged style base. The species is most closely related to the two entire-leaved species, N. araliaefolia (Less.) R.M.King & H.Robinson and N. psoralea (B.L.Robinson) R.M.King & H.Robinson, having lacinate inner phyllaries as in the former and deeply cleft corolla lobes as in the latter. The new species differs from both its closest relatives by the reddish color of the corollas and by the mostly two flowers per head.

The plants observed in the field are sometimes 10 or more feet up on trunks of trees but have rhizomes reaching the ground.

Neomirandea croatii R.M.King & H.Robinson, sp. nov.

Plantae epiphyticae frutescentes subcarnosae ca. 1 m altae pauce ramosae. Caules teretes dense hirsuti. Folia opposita breviter anguste petiolata, petiolis plerumque 5-10 mm longis; laminae late ellipticae vel obovatae plerumque 5.5-9.5 cm longae et 3.0-6.5 cm latae subcoriaceae base breviter cuneatae margine integrae apice leniter breviter acuminatae supra sparsim hispidulae subtus sparsim pilosae in nervis densius pilosae. Inflorescentiae late corymbosae usque ad 12 cm altae et 15 cm latae, ramis ultimis 2-9 mm longis

puberulis. Capitula ca. 9 mm alta. Squamae involucri ca. 8-9 subimbricatae ca. 3-seriatae valde inaequilongae 3-6 mm longae et 0.8-1.0 mm latae lineari-lanceolatae apice obtusae extus sparsim minute puberulae et raro glanduliferae; receptacula plana minute puberula. Flores plerumque 5 in capitulo; corollae ca. 7 mm longae anguste infundibulares lavenderae vel purpurascens intus glabrae extus inferne subglabrae, lobis ovato-oblongis ca. 0.8 mm longis et 0.5-0.6 mm latis extus sparsim glanduliferis et minute puberulis; cellulis subquadratis vel breviter oblongis, parietibus non sinuosis; filamenta in parte superiore ca. 0.7 mm longa; thecae antherarum ca. 1.2 mm longae, appendicibus ovato-oblongis ca. 250 μ longis et 200 μ latis; styli inferne non inflati glabri; achaenia prismatica 2.5-3.0 mm longa subglabra inferne et superne sparsim puberula et breviter setifera; carpodia distincta brevia, cellulis subquadratis 3-4-seriatis; setae pappi ca. 50 apice vix scabrae vix clavatae. Grana pollinis ca. 25 μ diam.

TYPE: PANAMA: Chiriquí: Las Nubes near Cerro Punta, ca. 2,000 meters elevation, August 7, 1974, Thomas B. Croat 26452 (Holotype US, Isotype MO).

N. croatii has a similar appearance and is probably most closely related to N. chiriquensis R.M.King & H.Robinson which occurs in the same general area of Panama. The new species differs by the puberulous stems, by the more pointed and pubescent leaves which have more prominent secondary veins, by the heads having only 5 florets and by the corollas being puberulous and glanduliferous on the outer surface rather than glabrous.

Neomirandea gracilis R.M.King & H.Robinson, sp. nov.

Plantae suffrutescens usque ad 1 m altae novae ramosae. Caules teretes subglabri superne puberuli. Folia opposita breviter anguste petiolata, petiolis ca. 1-2 mm longis; laminae oblongo-ellipticae plerumque 4-8 cm longae et 1.5-3.0 cm latae papyraceae base rotundatae vel breviter cuneatae margine remote distincte serrulatae apice breviter obtuse acute supra sparsim glandulo-punctatae subtus minute sparsim puberulae dense glandulo-punctatae, nervis primariis subtus subpilis, nervis secundariis pinnatis obscuris. Inflorescentiae parvae corymbosae paniculatae 4.5 cm latae et 3.5 cm altae, ramis puberulis et pauca glanduliferis, ramis ultimis 1.5-6.0 mm longis. Capitula

ca. 6 mm alta et 1.5 mm lata. Squamae involucri fulvi ca. 12 subimbricatae vel eximbricatae ca. 2-seriatae anguste oblongae 1.5-2.5 mm longae et ca. 0.4 mm latae apice anguste rotundatae extus sparsim puberulae et glanduliferae; receptacula glabra. Flores 8-9 in capitulo; corollae ca. 4 mm longae lavendulae anguste infundibulares intus glabrae extus sparsim puberulae et glanduliferae in lobis dense glanduliferae, lobis breviter triangularibus ca. 0.45 mm longis et 0.5 mm latis, cellulis quadratis, parietibus non sinuosis; filamenta in parte superiore angusta ca. 0.5 mm longa; thecae antherarum ca. 0.9 mm longae, appendicibus ovato-oblongis ca. 200 μ longis et 175 μ latis; styli inferne non inflati glabri; achaenia prismatica ca. 1.7 mm longa puberula et glandulifera; carpodia distincta perbrevia, cellulis subquadratis ca. 3-seriatis; setae pappi ca. ca. 32-35 apice parum clavatae acutae. Grana pollinis 20-22 μ diam.

TYPE: PANAMA: Veraguas: Valley of Rio Dos Bocas, along road between Escuela Agricola Alto Piedra and Calovebora, 15.6 kms NW of Santa Fe. Alt. 450-550 meters, 31 August 1974, Thomas B. Croat 27701 (Holotype US, Isotype MO).

The new species is related to N. eximia (B.L. Robinson) R.M. King & H. Robinson and occurs at the extreme eastern edge of the range of the latter. Neomirandea gracilis differs from most specimens of N. eximia by the serrulate more sessile oblong leaves, by the more sparing inflorescence and by the numerous glands on the corolla lobes. Some material of N. eximia from the same province of Panama show similar sparing inflorescences and serrulation which suggests some past hybridization. The new species shares the leaf serrulations and glandular corollas with N. parasitica (Klatt) R.M. King & H. Robinson of Costa Rica but has much more sessile oblong leaves of more herbaceous texture. The Costa Rican species has essentially non-puberulous leaves with much less prominent glandular punctations.

Neomirandea grosvenorii R.M. King & H. Robinson, sp. nov.

Plantae grosse herbaceae vel subarborescentes erectae usque ad 5 m altae non ramosae base erectae. Caules subteretes vel valde striati dense granuloso-puberuli. Folia opposita majuscula longipetiolata, petiolis usque ad 33 cm longis adaxialiter distincte

multilacerate alatis in foliis superioribus valde stipulatis; laminae late deltoideae vel aceriformes palmatae usque ad 32 cm longae et latae grosse dentatae vel vadose lobatae ad apicem vix acuminatae base rotundatae vel truncatae 3-5-nervatae supra sparsim plerumque in nervis puberulae subtus glandulo-punctatae in nervis et nervulis dense granuloso-puberulae. Inflorescentiae corymbosae usque ad 30 cm latae et 15 cm altae, ramis dense puberulis, ramis ultimis 1-4 mm longis. Capitula ca. 10 mm longa et 2.5 mm lata. Squamae involucri fulvae ca. 16 imbricatae 4-5-seriatae ovatae vel oblongae 1.5-7.0 mm longae et ca. 1.5 mm latae apice perbreviter obtusae minute fimbriatae extus glabrae; receptacula glabra. Flores 4-5 in capitulo; corollae ca. 7 mm longae roseae? inferne tubulares valde indurata, tubis ca. 3.5 longis, faucibus perbrevibus infundibularibus intus glabris, lobis anguste oblongis ca. 1.5 mm longis et 0.5 mm latis extus plerumque glabris superne pauce perbreviter setiferis et glanduliferis, cellulis quadratis, parietibus non sinuosis; filamenta in parte superiore subfusiformia ca. 300 μ longa; thecae antherarum ca. 1 mm longae, appendicibus oblongis ca. 200 μ longis et 175 μ latis; styli inferne inflati glabri; achaenia prismatica ca. 4 mm longa superne breviter pauce setifera ceterum glabra; carpodia breviter cylindrica, cellulis subquadratis ca. 15 μ diam. ca. 10-seriatis; setae pappi 45-50 flavescens apice vix scabrae non clavatae. Grana pollinis ca. 25 μ diam.

TYPE: COSTA RICA: Cartago: southern slopes of Volcan Irazu and Volcan Turrialba, ca. 3 kms generally NE of San Rafael de Irazu. Elevation ca. 8,300 ft., June 18, 1974, Robert Merrill King 6823 (Holotype US). Paratype same location: R.M.King 6822 (US).

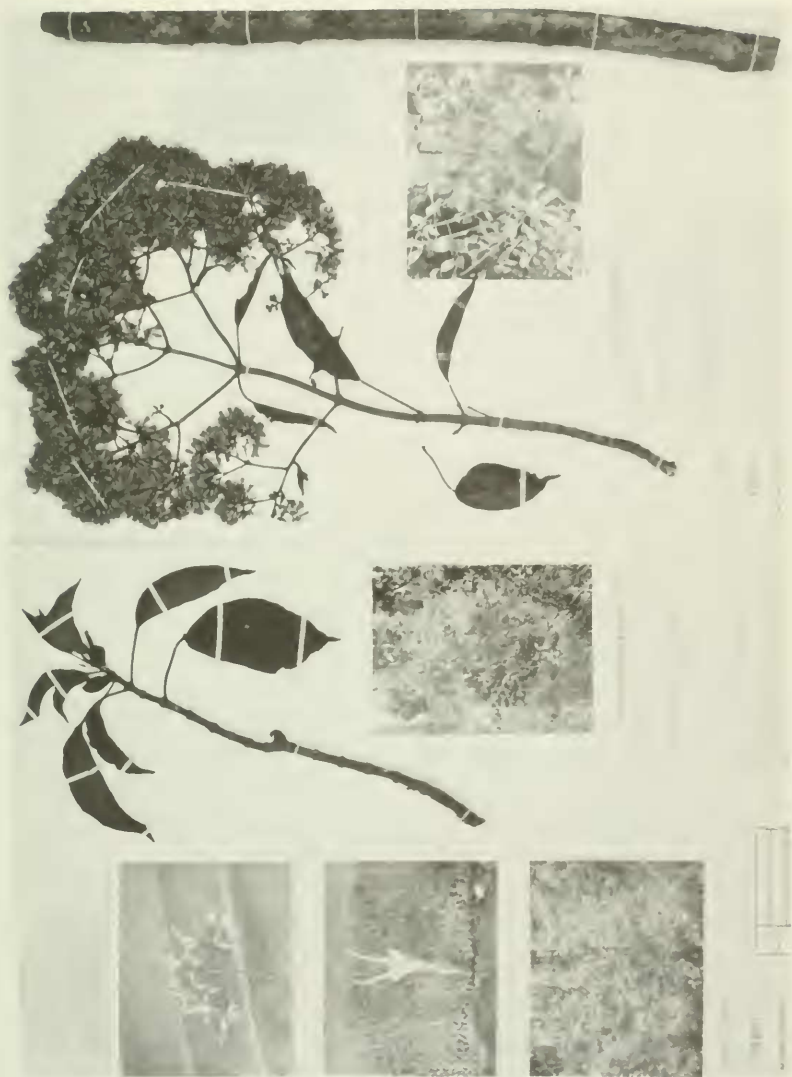
The new species is one of the few having enlarged style bases but no hairs on the inner surface of the corolla. The most closely related species in Costa Rica, N. burgeri R.M.King & H.Robinson has larger more retrorse teeth on the petiole and has a long horizontal rhizome from which the erect shoots arise. The new species completely lacks any horizontal rhizome. Closest relationship is actually to N. panamensis R.M. King & H.Robinson of western Panama. The new species differs by the greater size of its heads and florets, and by the consistently winged petioles of the leaves. In N. panamensis only the leaves at the base of the inflorescence seem to have wings on the petioles. Possible distinctions needing confirmation are the

longer internodes of the thickened broadly fistulose stems and the nonglanduliferous corolla tubes.

The new species is named in honor of Gilbert Grosvenor of The National Geographic Society.

Acknowledgement

This study was supported in part by the National Science Foundation Grant BMS 70-00537 A04 to the senior author. Field work in Costa Rica was supported by a grant from the National Geographic Society, Washington, D.C.



Neomirandea biflora R.M.King & H.Robinson, Holotype,
United States National Herbarium. Photos by Victor E.
Krantz, Staff Photographer, National Museum of Natural
History.



Neomirandea croatii R.M.King & H.Robinson, Holotype,
 United States National Herbarium.



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Neomirandea gracilis R.M.King & H.Robinson, Holotype,
United States National Herbarium.



PLANTS OF COSTA RICA

MARIANO RIVERA, 1921

NEOMIRANDEA GROSVENORII R.M. King & H. Robinson

1921-1922

Several tall trees ca. 4 meters high, flowers
all past anthesis, pinkish?

1. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 2. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 3. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 4. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 5. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 6. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 7. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 8. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 9. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).
 10. *Neomirandea grosvenorii* R.M. King & H. Robinson, *Phytologia* 29: 360 (1958).

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Neomirandea grosvenorii R.M. King & H. Robinson,
 Holotype, United States National Herbarium.



Enlargements of heads of Neomirandea. Top left; Neomirandea biflora. Top right; N. croatii. Bottom left; N. gracilis. Bottom right; N. grosvenorii.